Remarks

Applicants respectfully request reconsideration of the above application in view of the present amendments and the following remarks. Claims 23, 24 and 26-41 are pending in this application. Claims 27, 32 and 34 are being amended herein without prejudice or waiver to clarify the claimed invention and to place the claims in better condition for allowance. No new matter has been introduced by virtue of the present amendments.

Rejection of Claims 27, 32 and 34 under 35 U.S.C. § 112, ¶ 1,
As Failing To Comply With The Enablement Requirement

Claims 27, 32 and 34 are rejected under 35 U.S.C. § 112, ¶ 1 as failing to comply with the enablement requirement. According to the Examiner, the term "resale channel" as recited in claims 27, 32 and 34 is not described in the specification in such a way as to enable one of ordinary skill in the art to make and/or use the invention. Although the Examiner states that the term "is mentioned in the specification, it is not described and therefore there is no way to understand what is meant by the term", the Examiner admits to understanding the term "resale channel" to mean "who is selling the vehicle". (Office Action, 12/02/03, page 2).

Without acquiescing to the Examiner's rejection, the Applicants have amended claims 27, 32 and 34 to remove the term "resale channel" in order to expedite prosecution of this Application, even though Applicant believe that this term is well known in the art. Applicants believe that this amendment obviates the Examiner's rejection and, therefore, Applicants respectfully request that the Examiner's rejection be withdrawn.

Rejection of Claims 33-41 under 35 U.S.C. § 112, ¶ 1,
As Failing To Comply With The Enablement Requirement

Claims 33-41 are rejected under 35 U.S.C. § 112, ¶ 1[1], as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. According the Examiner, "[t]he formulae in claims 33, 35 and 36 are incomplete"

---

[1] Applicants note that the Examiner rejected claims 33-42. However, the rejection as to claim 42 is moot since Applicants cancelled that claim in response to the Office Action dated March 10, 2003.

-7-

since "they do not explain how to use the variables, as there is no mention in the specification as to how to combine the variables to achieve the stated results, there is no way to use these claims." (Office Action, 12/02/03, pages 2-3). In response to Applicants' remarks of 06/03/03, the Examiner states:

> As to arguments involving the formulae in claims 33, 35 and 36, they are not complete. Further, the applicant remarks that "(please note the variable v_1 and v_2 are used in a different context than claim 33)". This would appear to reinforce the Examiner's arguments that the formulae are unclear as there are there [sic] are acknowledged by applicant different uses for the same variable. This, coupled with vague references to using variables in a formula without explaining the exact formula, would make the claims unclear and indefinite. Further, applicant lists two Errors, p and k, without explaining how to compute the error. Thus, there is no enablement.

(Office Action, 12/02/03, page 4).

The Examiner posits that the Applicants must provide complete and exact formulas to enable claims 33, 35 and 36. The standard for enablement does not require this level of completeness. "[T]he patent document is not intended to be a production document." *Northern Telecom, Inc. v. Datapoint Corp.*, 15 USPQ2d 1321, 1329 (Fed. Cir. 1990). "Detailed procedures for making and using the invention may not be necessary if the description of the invention itself is sufficient to permit those skilled in the art to make and use the invention." M.P.E.P. § 2164 (Eighth Edition, Rev. 1. Feb. 2003). As described in detail below, the Applicants have provided a description sufficient for a skilled artisan to use the claimed invention.

Further, the Examiner states "there is no mention in the specification as to how to combine the variables to achieve the stated results". (Office Action, 12/02/03, page 3). To the contrary, the specification gives a detailed description of how to use a combination of variables to obtain an estimated value for a used vehicle.

-8-

The Examiner also opines that the Applicants use of variables is unclear and indefinite since the same variable is used to denote a different value. First, Applicants note that the Examiner did not reject the claims as being indefinite. Second, it is common in the technological arts to use the same variable to connote different values. For example, the variable "V" can denote volume or voltage. As such, Applicants believe that this is not a proper basis in which to form a lack of enablement rejection.

In support of claims 33-41 being sufficiently enabled, enclosed herewith is a Declaration signed by one of the inventors, Ms. Yi Lu. The Declaration attests that the inventors were in possession of the claimed invention at the time of filing the Application on June 29, 2000 and that the description filed therewith was sufficiently enabling to one of ordinary skill in the art to make and use the invention as recited in claims 33-41. (Lu Declaration, 02/27/04, ¶ 5).

Addressing the rejected claims, claim 33 recites a computer-implemented method for estimating value of a used vehicle. The method contemplates using a group of parameters that the Applicants have assigned variable names in order to clarify the claimed invention. One of ordinary skill in the art understands how to use the assigned variable names of claims 33-41 to implement the claimed method for estimating value of used vehicles. (Lu Declaration, 02/27/04, ¶ 6). The parameters of claims 33-41 are adequately described in the specification on pages 7 through 9 and enable one of ordinary skill in the art to practice the claimed method for estimating used vehicle value. (Lu Declaration, 02/27/04, ¶ 7). V_1 equals data from a historical database comprised of a number N of used vehicle records. page 7, lines 25-26 ("a historical database of used vehicles"). v_1 equals a used vehicle record in V_1. page 8, lines 6-9 ("historical database ... includes a plurality of records ... [of] used vehicle[s]"). f_1 equals a plurality of vehicle features of v_1. page 8, lines 8-10 ("plurality of records ... include a complete description of all the features ... of each used vehicle"). V_2 equals a data set comprised of at least one target used vehicle record. page 8, lines 2-4 ("a set of used vehicles (target vehicles) ... whose market value is to be estimated/predicted"). v_2 equals a target used vehicle record. page 9, lines 3-8 ("set of .. target vehicles ... contains

-9-

detailed descriptions ... of each used vehicle"). f_2 equals a plurality of vehicle features of v_2. page 9, lines 3-8 ("set of used vehicles ... contains detailed descriptions of the features"). Const equals an at least one constraint for determining a neighbor relationship between a pair of used vehicles. page 7, lines 26-29 ("a set of neighbor constraints ... or maximum acceptable differences for a pair of vehicles to be considered neighbors"). F_d equals a neighborhood distance function for determining a distance between a pair of used vehicles. page 8, lines 22-26 ("distance functions ... are formulas which map or correlate a difference in features or vehicle contents between the pair of vehicles to an amount of used vehicle resale value"). K equals a nearest neighbor value. page 9, lines 20-22 ("the estimation accuracy of the current K value is evaluated using only the vehicles in the historical database"). $Error_P$ equals a previous estimation error. page 9, lines 17-18 ("previous error is set to a large number"). $Error_K$ equals a used vehicle market error. page 9, lines 24-25 and page 10, line 1 ("an average estimation error for the current K number of neighbors is computed ..., [this] estimation error is assigned to a variable $error_K$").

According to claim 33, step A recites receiving data which includes: V_1 comprised of a number N of v_1, each v_1 comprising resale information and f_1, V_2 comprised of at least one v_2, each v_2 comprised of f_2, Const, F_d, K, and $Error_P$. The data is explicitly disclosed and supported by the written description, as described in detail above. Receiving such data is also supported by the specification and knowledge of one reasonably skilled in the art. page 7, line 25 ("[the] ... process ... requires the following inputs"). The Lu Declaration supports that the detailed description at page 7, line 25 adequately describes and enables one of ordinary skill in the art to receive V_1 and V_2. (Lu Declaration, 02/27/04, ¶ 8).

According to claim 33, step B recites determining an $Error_K$ based on V_1, Const, F_d, and K. The following passages from the original specification describe this determination step in such a way to use it (please note the variables v_i and v_2 are used in a different context than claim 33):

> At block 34, the estimation accuracy of the current K value is evaluated using only the vehicles in the historical database 12. This step will be described in further detail hereinafter [on page 11, lines 25-29 and page 12, lines 1-11]. At block 36 an average estimation error for the current K number of neighbors is computed by dividing the sum of errors for all vehicles in

historical database 12 by the total number of vehicles in historical database 12. This generates the average estimation error associated with the current value of K. The computed average estimation error is assigned to a variable error$_K$.

page 9, lines 2 through page 10, line 1.

> where for each neighbor vehicle there is computed an estimation for the market value of the target vehicle by adjusting the known value of neighbor vehicle based on the distance function. At block 68, a distance-weighted average of all the adjusted known market value estimations is used to generate the final market value estimation for the target vehicle. For example, if there are three neighbors v_1, v_2 and v_3 and the distances are d1, d2 and d3, respectively, then the weights for v_1, v2 and v3 are W1 = D1/(D1 + D2 + D3), W2 = D2/ (D1 + D2 + D3), and W3 = D3/(D1 + D2 + D3) where D1 = (d1 + d2 + d3)/d1, D2 = (d1 + d2 + d3)/d2 and D3 = (d1 + d2 + d3)/d3. Finally, at block 70, the estimation error for the target vehicle is calculated by taking the difference between the estimated value and the actual resale price for the target vehicle.

page 11, line 25 through page 12, line 11.

The Lu Declaration supports that the detailed description on page 9, line 2 through page 10, line 1 and page 11, line 25 through page 12, line 11 adequately describes and enables one of ordinary skill in the art to determine an Error$_K$ based on V_1, Const, F_d, and K. (Lu Declaration, 02/27/04, ¶ 9).

According to claim 33, step C recites "if Error$_K$ is less than about Error$_P$, then (C1) determining an estimated value for each v_2 in V_2 based on V_1, V_2, Const, F_d, and K, (C2) setting K to K plus 1 and Error$_P$ to Error$_K$, and (C3) looping to step (B). The following passage from the original specification describes this iterative determination step in such as way to use it:

> The average estimation error is checked for improvement, as represented by block 38. More specifically, it is determined whether error$_K$ is less than the previous error. If error$_K$ is less than the previous error, than the previous error is set equal to error$_K$, as represented by block 40. However, if error$_K$ is not less than the previous error, then the DWNN process is stopped and the market value estimations using the previous K are considered to be the most accurate values, as represented by blocks 38 and

48.

page 10, lines 1-11.

The Lu Declaration supports that the detailed description on page 10, at lines 1-11 adequately describes and enables one of ordinary skill in the art to carry out step C of claim 33. (Lu Declaration, 02/27/04, ¶ 10).

Accordingly, since the specification enables one of ordinary skill in the art to use claim 33, Applicants respectfully request that the Examiner withdraws the rejection based on a failure to comply with the enablement requirement.

With respect to claim 35, step B of claim 33 is described in greater detail. Parameters not included in claim 33 are introduced in claim 35. These parameters are given variable names to clarify the claimed invention. The parameters are supported and enabled by the written description as originally filed. (Lu Declaration, 02/27/04, ¶ 6). V' refers to a neighbor group. page 11, lines 10-12 ("all vehicles in historical database ... which satisfy the neighbor constraints ... are located and saved"). v' refers to a used vehicle in the V' set. page 11, lines 10-12 ("all vehicles in historical database ... which satisfy the neighbor constraints ... are located and saved").

According to claim 35, for each v_1 in V_1, (B11) a neighbor group V' of K used vehicles v' for v from V_1 based on Const, F_d, and f_1 is determined, (B12) for each v' in V', a weighted estimated value for v_1 based on v', f_1 and F_d is determined, (B13) an estimated value for v_1 based on each weighted estimated value of v_1 is determined, (B14) an estimated error for v_1 based on the estimated value for v_1 and the resale price of v_1, and (B2) $Error_K$ based on the estimated error for each v_1 in V_1, and N is determined. Applicants refer to the portions of the original specification cited above (page 9, lines 2-29; page 10, line 1; page 11, lines 25-29 and page 12, lines 1-11.) in support of claim 35. These passages clearly support and describe the subject matter of claim 35. The Lu Declaration also supports that the detailed description on pages 9 through 12 adequately describes and enables one of ordinary skill in the art to carry out steps (B11), (B12), (B13), and (B14) of claim 35. (Lu Declaration, 02/27/04, ¶ 11). As such, Applicants respectfully request that the Examiner withdraws the rejection based on a failure to comply with the enablement requirement.

With respect to claim 36, step C of claim 33 is described in greater detail. Parameters not included in claim 33 are introduced in claim 36. These parameters are given variable names to clarify the claimed invention. The parameters are supported and enabled by the written description as originally filed. (Lu Declaration, 02/27/04, ¶ 6). V' is a group of nearest neighbor vehicles. page 12, lines 22-24. ("only a K number of nearest neighbors in the neighborhood subset are selected based on the distances calculated"). v' refers to a used vehicle in the V' set. page 12, lines 22-24. ("only a K number of nearest neighbors in the neighborhood subset are selected based on the distances calculated").

According to claim 36, for each v_2 in V_2, (C11) a nearest neighbor group V' of K used vehicles v' for v_2 from V_1 based on Const, F_d, f_1, and f_2 is determined, (C12) for each v' in V', a weighted estimated value for v_2 based on v' F_d, f_1, and f_2 is determined, and (C13) an estimated value for v_2 based on each weighted estimated values of v_2 is determined. The following passage from the original specification describes these determination steps in such a way to use them:

> Referring now to Figure 4, a flowchart illustrating the steps for estimating the market value for all the used vehicles (target vehicles) 20 whose market value is unknown is illustrated, in accordance with the present invention. At block 80, all vehicles in the historical database 12 that satisfy the neighbor constraints 14 are found and segregated into a neighborhood subset. The distance between each neighbor vehicle in the neighborhood subset and the target vehicle whose market value is to be estimated is determined. However, only a K number of nearest neighbors in the neighborhood subset are selected based on the distances calculated, as represented by block 82. At block 84, it is determined whether there are enough neighbors to conduct a market value estimation. If there are not a K number of neighbors available, then the target vehicle is rejected and another target vehicle in used vehicles set 20 is selected, and the process repeats itself as represented by blocks 84, 92 and 80.

> However, if there are enough neighbors, then a market value for the target vehicle is estimated for each neighbor vehicle in the neighborhood subset. The market value estimation is calculated by adjusting the value of each neighbor by a market value dollar amount determined using the distance function 18, as represented by block 86. At block 88, a distance-weighted average of all market value estimations are computed to generated a final estimation for the target vehicle. For example, in a similar manner as described above, if there are three neighbors v_1, v_2 and

v3 and the distances are d1, d2 and d3, respectively, then the weights for v_1, v_2 and v_3 are W1=D1/(D1+D2+D3), W2=D2/(D1+D2+D3), W3=D3/(D1+D2+D3) where D1=(d1+d2+d3)/d1, D2=(d1+d2+d3)/d2 and D3=(d1+d2+d3)/d3. Finally, at block 90, the target vehicle whose market value has been estimated is added to the used vehicle data set 22.

page 12, lines 12-29 and page 13, lines 1-20.

The Lu Declaration supports that the detailed description at page 12, line 12 through page 12, line 20 adequately describes and enables one of ordinary skill in the art to carry out the steps (C11), (C12), and (C13) of claim 36. (Lu Declaration, 02/27/04, ¶ 12).

Accordingly, since the specification enables a skilled artisan to use claim 36, Applicants respectfully request that the Examiner withdraws the rejection based on a failure to comply with the enablement requirement.

In sum, since the formulae of claims 33, 35 and 36 are sufficiently enabled, Applicants respectfully request the Examiner withdraw the lack of enablement rejection with respect to claims 33-41.

Rejection of Claims 23, 24 and 26-41 under 35 U.S.C. § 103(a) as Being Obvious in Light of Nada's Web Page

Claims 23, 24 and 26-41 have been rejected under 35 U.S.C. § 103(a)[2] as being obvious in light of NADA's web page ("NADA") which discloses a method of determining a vehicle's price. According to the Examiner, "NADA discloses a method for determining a vehicle's price which includes checking historical values for cars (paragraph 2 on page 1) and using this to generate values for autos." (Office Action, 12/02/03, page 3). The Examiner states "[w]hile they don't specifically mention adjusting for error, this would be inherent." *Id.* The Examiner opines that "[I]t is further inherent in the NADA that they [sic] user compares the values in the book to a similar car." *Id.* According to the Examiner, "[t]here are factors listed that increase and decrease the value of the auto, including; [sic] high mileage, low

---

[2] Applicants note that the Examiner rejected claims 23-41. However, the rejection as to claim 42 is moot since Applicants cancelled that claim in response to the Office Action dated March 10, 2003.

mileage, automatic or standard transmission, air conditioning, sound system, power accessories, region, sun/moon roof, spoiler, alloy wheels et al." *Id.* The Examiner states "they [NADA] further compare comparable vehicles for their prices and adjust the prices for other vehicles, they have a price for average and then list prices for clean, rough and further list a wholesale price." *Id.* According to the Examiner, "[t]hese values would be distance weighted from the average price." *Id.* The Examiner states "[t]he NADA book further is region-specific and thus, there would be the ability to determine distance between autos." *Id.*

NADA's website does not teach, disclose, or suggest the invention as recited in claims 23, 24 and 26-41. The historical database disclosed by NADA does not consist of a number K of used vehicle nearest neighbor records. NADA does not determine an estimated value for target used vehicles based on the data from the historical database consisting of a number K of used vehicle nearest neighbor records. Claim 23 recites receiving a nearest neighbor database of a number K of used vehicles. According to claim 23, the number K is iteratively selected for estimation accuracy based on a historical database of N used vehicle records. The other pending independent claim, claim 33, sets forth the iterative nearest neighbor aspect of the Applicants invention in algebraic form.

These claimed features overcome the difficulties and shortcomings of NADA's method by using a local search mechanism. NADA uses a data set of comparable vehicles whereas the Applicants control the number of comparable vehicles, i.e., nearest neighbors, that are used in the estimation process to provide the most accurate estimation of market value. One feature of the Applicants' invention as recited in claims 23 and 33 is to select the best value for K such that the estimation error is minimized. NADA does not minimize estimation error based on selecting the best value for K, i.e., the number of nearest neighbors, if it minimizes error at all. Similarly, the method recited in claim 33 describes the method for minimizing error by selecting the best value for K, the number of nearest neighbors, and using this number of nearest neighbors as the basis for determining a used vehicle's market value. For at least these reasons, the Applicants' claimed invention is patentable in light of NADA.

Furthermore, one of ordinary skill in the art would not be motivated to modify NADA to provide the Applicants' invention as recited in claims 23, 24 and 26-41. As acknowledged by the Examiner, NADA computes an average price based on comparable
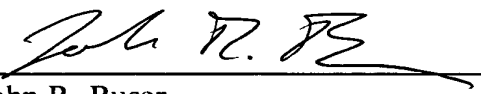
vehicles which is adjusted based on vehicle condition, whereas the Applicants' claimed method determines a subset of comparable vehicles, referred to as nearest neighbors, which are used as the basis for distance weighting to obtain very accurate price estimates. Notably, NADA teaches away from the nearest neighbor concept by accounting for variations from average based solely on list prices for clean, rough, and wholesale vehicles. As acknowledged by the Examiner, NADA's method for determining vehicle prices provides one of the best sources for automobile prices, leaving one of ordinary skill in the art unmotivated to improve on NADA's estimation method. However, Applicants' claimed invention is an improvement over NADA by using the nearest neighbor concept in addition to distance weighting adjustments. For at least these reasons, Applicants contend that claims 23, 24 and 26-41 are patentable in light of the teachings of NADA.

Conclusion

For the foregoing reasons, Applicants believe that the Office Action of October 3, 2002 has been fully responded to. Consequently, in view of the above amendments and remarks, Applicants respectfully submit that the application is in a condition for allowance, which allowance is respectfully submitted.

The Commissioner is hereby authorized to charge any fees associated with the filing of this paper to the deposit account of Ford Global Technologies, Inc., Account No. 06-1510.

Respectfully submitted,
JIE CHENG, ET AL

By _____
John R. Buser
Reg. No. 51,517
Attorney for Applicant

Date: 3-02-04

BROOKS KUSHMAN P.C.
1000 Town Center, 22nd Floor
Southfield, MI 48075
Phone: 248-358-4400
Fax: 248-358-3351

Enclosure

-16-